

# Mathematics Standards Articulated by Grade Level

## **Strand 1: Number Sense and Operations**

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

<b>Concept 1: Number Sense</b>	The concept of understanding and applying numbers, ways of representing numbers, the relationships among numbers and different number systems.
<b>Concepts 2: Numerical Operations</b>	The concept of understanding and applying numerical operations and their relationship to one another.
<b>Concept 3: Estimation</b>	The concept of using estimation strategies reasonably and fluently.

## **Strand 2: Data Analysis, Probability, and Discrete Math**

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

<b>Concept 1: Data Analysis (Statistics)</b>	The concept of understanding and applying data collection, organization and representation to analyze and sort data.
<b>Concept 2: Probability</b>	The concept of understanding and applying the basic concepts of probability.
<b>Concept 3: Discrete Mathematics: Systematic Listing &amp; Counting</b>	The concept of understanding and demonstrating the systematic listing and counting of possible outcomes.
<b>Concept 4: Discrete Mathematics: Vertex-Edge Graphs</b>	The concept of understanding and applying vertex-edge graphs.

### **Strand 3: Patterns, Algebra, and Functions**

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

<b>Concept 1: Patterns</b>	The concept of identifying patterns and applying pattern recognition to reason mathematically.
<b>Concept 2: Functions &amp; Relationships</b>	The concept of describing and modeling functions and their relationships.
<b>Concept 3: Algebraic Representations</b>	The concept of representing and analyzing mathematical situations and structures using algebraic representations.
<b>Concept 4: Analysis of Change</b>	Analyze change in a variable over time and in various contexts.

### **Strand 4: Geometry and Measurement**

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

<b>Concept 1: Geometric Properties</b>	The concept of analyzing the attributes and properties of two and three dimensional shapes and developing mathematical arguments about their relationships.
<b>Concept 2: Transformation of Shapes</b>	The concept of applying spatial reasoning to create transformations and use symmetry to analyze mathematical situations.
<b>Concept 3: Coordinate Geometry</b>	The concept of specifying and describing spatial relationships using coordinate geometry and other representational systems.
<b>Concept 4: Measurement</b>	The concept of understanding and applying appropriate units of measure, measurement techniques, and formulas to determine measurements.
<ul style="list-style-type: none"><li>- Units of Measure</li><li>- Geometric Objects</li><li>-</li></ul>	

### **Strand 5: Structure and Logic**

Every student should understand and use all concepts and skills from the previous grade levels. The standards are designed so that new learning builds on preceding skills and are needed to learn new skills. Communication, Problem-solving, Reasoning & Proof, Connections, and Representation are the process standards that are embedded throughout the teaching and learning of mathematical strands.

<b>Concept 1: Algorithms and Algorithmic Thinking</b>	The concept of using reasoning to solve mathematical problems in contextual situations.
<b>Concept 2: Logic, Reasoning, Arguments, and Mathematical Proof</b>	The concept of evaluating situations, selecting problem-solving strategies, drawing logical conclusions, developing and describing solutions and recognizing their applications.